Paragraphs 1 through 5

The present invention relates to a method for preparing a printed product ~~which is prepared~~ by transferring a transfer layer of an intermediate transfer recording medium on which an image is formed, via a transferring adhesive layer, on a surface of a transfer-receiving material with an excellent adhesive property.

There is ~~have been~~ known a method ~~to prepare~~ of preparing a printed product using an intermediate transfer recording medium. The intermediate transfer recording medium is hitherto used to form a printed product which is formed so that an image is recorded on a receptor layer then the receptor layer is transferred onto a transfer-receiving material. On the receptor layer, ~~since~~ images are recorded by thermal transfer recording methods using a thermal transfer sheet, depending on a composition of materials, forming high quality images ~~can be formed~~. Further, because a receptor layer may have an excellent adhesive property with a transfer-receiving material, or can be transferred to a transfer-receiving material via an adhesive layer with an ~~satisfied~~ adequate adhesive property, this method is preferably used for a transfer-receiving material on which high quality images cannot be formed directly because coloring materials hardly migrate to the transfer-receiving material, and which easily fuse and adhere to a coloring material layer during thermal transferring.

Fig. 12 shows a schematic sectional view of one example of a typical intermediate transfer recording medium. An intermediate transfer recording medium 101 is composed of a base film 102 and a transfer layer 112 which comprises at least a receptor layer 105. On the receptor layer 105, images 106 ~~is~~ are formed through thermal transferring with a thermal-transferring sheet having a coloring material layer. The transfer layer 112, having the receptor layer 105 on which images 106 ~~is~~ are formed, is separated from a base film 102, and transferred on the transfer-receiving material, then images 106 as an objective are formed on the transfer-receiving material.

~~Through~~ By using such an intermediate transfer recording medium, high resolution and high quality images can be transferred and formed on a transfer-receiving material. Because the required images, for example ~~such as~~ a letter ~~and~~ or a photograph of one's face ~~are~~ is formed on the transfer layer of the intermediate transfer recording medium in advance, ~~then~~ the images can

then be formed on the transfer-receiving material by transferring. The method is superior to the ~~others on the point in which~~ methods because the images can be easily formed on transfer-receiving material even if the images exist individually, such as a booklet of a passport and a base material of a card ~~accordingly it uses preferably~~. Further, ~~the~~ additional images can be formed through ~~that required matters such as~~ an image, for example a signature, can be ~~are~~ entered or printed on a transfer-receiving material in advance, then a transfer layer formed images such as letters and pictures can be transferred from the intermediate transfer recording medium. Therefore, the intermediate transfer recording medium can be preferably used to form an identification document such as a passport, and a printed product such as a credit card, an ID card, and so on.

In this ~~sort of~~ thermal transfer method, a thermal transfer sheet, composed of a coloring material layer formed on a base film, and a transfer-receiving material on which a receptor layer is formed as occasion demands, are pressure-welded between a heating device such as thermal head and a platen roll, and heating portions of the heating device are selectively heated in accordance with ~~an information of~~ the images to be transferred, so that a coloring material contained in the coloring material layer on the thermal transfer sheet is transferred on the transfer-receiving material thereby to record the images thereon. These thermal transfer methods are generally classified into a fusion thermal transfer method and a sublimation transfer method.

Paragraphs 10-12

Furthermore, in Japanese patent Laid-open Publication No. SHO 62-238791 and the Japanese patent Laid-open Publication No. HEI 4-133793, there is disclosed a technique such that an intermediate transfer recording medium formed by providing the receptor layer on a base film to be separable is preliminarily prepared and an image is formed by transferring a dye from a thermal transfer sheet on this receptor layer. Thereafter, the receptor layer bearing the image is transferred to the transfer-receiving material by heating thus ~~formed~~ forming the intermediate transfer recording medium. According to these methods, not only on transfer-receiving material with ~~an~~ a satisfied dyeing property, but also on transfer-receiving materials with a less dyeing

property, and with easily melt-adhering property by heating from thermal head and the like, images can be transferred and formed. An ~~bad~~ improper influence of uneven surface and formation of a transfer-receiving material can be prevented.

To improve ~~a~~ the poor quality of transferring which occurs in the case that adhesive strength between a receptor layer bearing an image and transfer-receiving material is not enough, adhesive strength between the receptor layer and the transfer-receiving material is increased through transferring an adhesive layer on the receptor layer of an intermediate transfer recording medium and/or transfer-receiving material from an adhesive layer transferring sheet, such as ~~disclosing~~ disclosed in the Japanese patent Laid-open Publication No. HEI 7-52522.

However, ~~in case~~ when using the above-mentioned adhesive layer transfer sheet, there are some cases that the problem of adhesive failure cannot be solved because adhesive strength between the receptor layer and the transfer-receiving material is not able to increase. For example, in some cases, an adhesive layer had enough adhesive property with a receptor layer, but not enough with a transfer-receiving material, and there were opposite cases.

Paragraphs 18-19

A first object of the present invention is to provide a method for preparing a printed product in which a transfer layer of an intermediate transfer recording medium can be transferred with sufficient adhesive property on a surface of a transfer-receiving material through that an adhesive layer ~~has~~ having a suitable adhesive property for adhering with both ~~of a~~ the transfer layer and a transfer-receiving material. ~~a part~~ Part of ~~a~~ the transfer layer can ~~be pattern transferred~~ transfer a pattern onto a transfer receiving material, and thus resulting in transferred images that do not have turbulence.

A second object of the present invention is to provide an adhesive layer transfer sheet which can transfer an adhesive layer having an adhesive property suitable for both ~~of~~ a receptor layer and a transfer-receiving material, in case there is no single ~~sort of a~~ material having an adhesive property suitable for both ~~of~~ a receptor layer as an outermost layer of an intermediate

transfer recording medium and a transfer-receiving material, ~~in order to transfer~~ so that the receptor layer of the intermediate transfer recording medium can be transferred on the transfer-receiving material. A further ~~Further~~ object of the present invention is to provide a printed product formed ~~through~~ by transferring a receptor layer of an intermediate transfer recording medium on a surface of a transfer-receiving material with a sufficient adhesive property, by means of the adhesive layer of the adhesive layer transfer sheet.

Paragraph 22

an adhesive layer transfer sheet comprising at least a substrate sheet and a transferring adhesive layer formed on the substrate sheet to be separable, in which the transferring adhesive layer comprises at least an uppermost layer having an adhesive property suitable for the receptor layer of the intermediate transfer recording medium and arranged at ~~a~~ the closest portion from the substrate sheet,

Paragraph 24

carrying out a second transfer step in which the transfer layer on which the transferring adhesive layer is transferred, transfers on the transfer-receiving material, and then

Paragraph 26

B6 In the other aspect of the present invention, there is also provided a method for forming a printed product comprising the steps of;

Paragraph 28

B7 an adhesive layer transfer sheet comprising at least a substrate sheet and a transferring adhesive layer formed on the substrate sheet to be separable, in which the transferring adhesive layer comprises at least a uppermost layer having an adhesive property suitable for a receptor layer of the intermediate transfer recording medium and arranged at ~~a~~ the closest portion from the substrate sheet, and a basement layer having an adhesive property suitable for a surface of the transfer-receiving material, forming a different material from a material of the uppermost layer, and arranged at ~~a~~ the farthest portion from the substrate sheet,

Paragraph 30

B8 carrying out a second transfer step in which the transfer layer is transferred on the transfer-receiving material on which the transferring adhesive layer is transferred, and then

Paragraph 32

B9 According to this aspect, since a printed product is formed by transferring a transfer layer on a transfer-receiving material via a transferring adhesive layer comprising an uppermost layer which ~~have a~~ has an adhesive property suitable for a transfer layer of an intermediate transfer recording medium, and a basement layer which ~~have a~~ has an adhesive property suitable for a surface of the transfer-receiving material, the transfer layer can be formed firmly on the transfer-receiving material not to depend on the material of the transfer layer and the transfer-receiving material. Accordingly, defects of transferring and separating in a transfer step do not occur, and the printed product having a satisfied quality can obtained. Since, as a first transfer step, a

transferring adhesive layer is transferred on either one of the transfer layer of the intermediate transfer recording medium or the transfer-receiving material, then as a second transfer step, it is transferred another to another one, an effective method for forming a printed product can be selected in accordance with a form of transfer-receiving material, and so on.

Paragraphs 35-36

Further, in the method for forming the printed product, the adhesive layer transfer sheet comprises at least one coloring material layer selected from the group consisting of sublimation dye layers having various colors and heat fusible ink layers having various colors, and the transferring adhesive ~~later~~ layer, and these layers are formed so as to laterally arrange them along the surface of the substrate sheet. And in the first transfer step, the image is formed through migrating the coloring material from the coloring material layer formed on the adhesive layer transfer sheet, before the transferring adhesive layer of the adhesive layer transfer sheet is transferred on the transfer layer of the intermediate transfer recording medium.

According to this method, since in the adhesive layer transfer sheet, the various coloring material layers for forming the image and the transferring adhesive layer ~~is~~ are formed so as to laterally arranged ~~arrange them~~ along a surface of the substrate sheet, on the transfer layer of the intermediate transfer recording medium, color images and letters ~~is~~ are transferred and formed, further the transferring adhesive layer can be transferred and formed on a series of continuous process. Thus, the process for forming the images can reduce~~, and preferable from the point of cost~~ the cost of forming images.

Paragraphs 38-39

According to the above-mentioned method, since the transferring adhesive layer formed with the required transfer-pattern by heating can be transferred on the transfer-receiving material, the transfer layer of the intermediate transfer recording medium can be transferred on the transferring adhesive layer transferred on the transfer-receiving material with the required

transfer-pattern, and adhered firmly, through use of the roller-transfer effective from ~~the~~ an economical point.

According to the above mentioned method for forming the printed product, since the transfer layer with the image has an excellent adhesive property with the uppermost layer in the transferring adhesive layer, and the transfer-receiving material has an excellent adhesive property with the basement layer of the transferring adhesive layer, the transfer layer can firmly arrange on the transfer-receiving material, regardless of the materials and the like of the transfer-receiving material. Accordingly, ~~the~~ a printed product ~~on which~~ free of defects of transferring and separation of the image ~~do not occur,~~ can be obtained. ~~And when~~ When a passport paper with an identification column is used as the transfer-receiving material, ~~since~~ the transfer layer bearing the image ~~is~~ can be arranged with an excellent adhesive property. For ~~for~~ example, the passport, ~~on which~~ can be free of defects like chipping of the images ~~such as~~ on a picture of one's face and identification matters and ~~separating~~ separation of the transfer layer ~~do not occur~~ can obtained.

Paragraphs 42-43

Preferably, the basement layer is formed of the materials which have an excellent adhesive property to ~~nature~~ natural paper, concretely, the material contains an ionomer, polyvinyl pyrrolidone or polyamide. In this case, more preferably, the basement layer comprised ionomer combines with the uppermost layer via an intermediate layer. At this time, the basement layer contained ionomer, preferably connected with the uppermost layer via the intermediate layer. According to this method, when the transfer-receiving material is the ~~nature~~ natural paper, the receptor layer of the intermediate transfer recording medium be transferred on the ~~nature~~ natural paper with satisfied adhesiveness.

Further, the uppermost layer is preferably formed of a resin having the glass-transition temperature of not less than 60°C. According to using this material, when the adhesive layer transfer sheet is kept under the condition such that the adhesive layer transfer sheet is rolled up,

Paragraphs 45-46

According to this invention, since the various coloring material layer to form the image and the adhesive layer are formed so as to laterally arrange them along a surface of the substrate sheet, color images and letters can be transferred and formed on the receptor layer of the intermediate transfer recording medium, then the adhesive layer can be transferred and formed in the series of the continuous process. Thus, the process for forming the image can reduce, and it is preferable from ~~the~~ an economical point.

A printed product of the present invention comprises at least a transfer-receiving material, a transferring adhesive layer arranged on the transfer-receiving material, and a receptor layer bearing an image arranged on the transferring adhesive layer, in which the transferring adhesive layer comprises at least an uppermost layer having an adhesive property suitable to the receptor layer and adhering to the receptor layer, and a basement layer formed of a different material from a material of the uppermost layer, having an adhesive property suitable to the transfer-receiving material, and adhering to the transfer-receiving material. In this case, the transfer-receiving material may be ~~nature~~ natural paper having a smoothness of 10-1500 seconds as Bec's smoothness.

Paragraphs 62-63

Fig. 1 shows a sectional view of one example of an intermediate transfer recording medium. An intermediate transfer recording medium 1 ~~using this invention uses~~ can be used in the present invention for transferring a transfer layer 9 after forming an image on a transfer-receiving material. The intermediate transfer recording medium 1 ~~is~~ comprises at least a base film 2 and a transfer layer 9 arranged on the base film 2 to be separable, and the transfer layer 9 at least comprises a receptor layer 8 on which an image is formed, and is used for transferring the transfer layer 9 bearing the image on the transfer-receiving material.

B14

In the transfer layer 9, each layer of a release layer 3, a protecting layer 4, a hologram layer 5, a transparent vapor deposition layer 6, an anchor layer 7, and a receptor layer 8 can be laminated from a side of the base film 2 in this order. Further, instead of these layers or adding to these layers, a conventional layer such as an ultraviolet rays absorption layer may be arranged as the occasion demands. These layers are shown the action and the effect which is well known until now, and the composition of the layers ~~do~~ are not to be limited. The detail of each layer will described later.

Paragraph 65-66

Fig. 2 is a schematic sectional view ~~shown~~ showing one example of an adhesive layer transfer sheet. An adhesive layer transfer sheet 21 as used in the present invention, ~~uses~~ is utilized to adhere a transfer layer 9 of an intermediate transfer recording medium 1 after forming an image, and a transfer receiving material ~~firmly~~. An adhesive layer transfer sheet 21 comprises at least a substrate sheet 22 and a transferring adhesive layer 27 (hereinafter referred to as "adhesive layer 27") arranged on the substrate sheet 22 to be separable. The adhesive layer 27 of the adhesive layer transfer sheet 21 is used for, first, transferred either on the transfer layer 9 of the intermediate transfer recording medium 1, or on the transfer-receiving layer, then transferred on another one with the transfer layer or the transfer-receiving layer on which the adhesive layer is transferred.

B15

An adhesive layer 27 comprises at least an uppermost layer 26 having a suitable adhesive property to transfer layer 9 of the intermediate transfer recording medium 1, and a basement layer 24 having a suitable adhesive property to the surface of the transfer-receiving material and formed of the different material from a material of the uppermost layer 26. Depending on the material of the uppermost layer 26 and the basement layer 24, there are some cases where ~~that the~~ these layers are difficult to adhere to each other directly, or there is not enough adhesive property between them. In this case, an intermediate layer 25 may be arranged, which is formed of the material adhering firmly to both of the basement layer 24 and the uppermost layer 26. Further, to facilitate transferring the adhesive layer 27, a release layer 23 may be arranged on the substrate sheet 22.

Paragraphs 68-76

A basement layer 24 and an uppermost layer 26 composed of the adhesive layer 27, arranged such that the uppermost layer 26 directly adhere to a transfer layer 9, and the basement layer 24 directly adhere to a transfer-receiving material. That is, when the adhesive layer 27 first transfers on the transfer layer 9, shown in ~~fig.~~ Fig. 2, the uppermost layer is arranged at the farthest position from the substrate sheet22 of the adhesive layer transfer sheet, and the basement layer 24 is arranged at the closest position to the substrate sheet 22. The other hand, when the adhesive layer 27 is transferred on the transfer-receiving material first, it is not shown but the basement layer 24 is arranged at the furthest position from the substrate sheet 22 of the adhesive layer transfer sheet, and the uppermost layer 26 is arranged at the closest position to the substrate sheet 22.

Fig. 3 is a schematic sectional view shown the other example of an adhesive layer transfer sheet which is used for the method of forming the printed product according to the present invention. An adhesive layer transfer sheet 31 is composed such that at least one coloring material layer selected from the group consisting of a sublimation dye layer 39 having various colors and a heat fusible ink layer 30 having various colors, and an adhesive layer 37 are formed so as to laterally arrange them along the surface on a substrate sheet 22. The adhesive

layer 37 has the same construction as ~~a construction of~~ the adhesive layer 27, shown in Fig. 2. Since this adhesive layer transfer sheet 31 can form an image and the adhesive layer 37 or the transfer layer 9 in the same transfer step without using a thermal transfer sheet which generally ~~uses~~ is used to form the image, this method has a superior productivity, and can further reduce the defects of transferring.

A sublimation dye layer 39 may be composed such that the sublimation dye layer 39 which comprises various color layers such as a yellow layer 39Y, a magenta layer 39M, a cyan layer 39C, and a black layer 39B are formed so as to laterally arrange them along a surface. A heat fusible ink layer 30 may also be composed such that the sublimation dye layer 39 which comprises various color layers is formed so as to laterally arrange them along a surface. The sublimation dye layer 39 and the heat fusible ink layer 30 may be selected and arranged in accordance with the images which should be transferred on the transfer layer 9 of the intermediate transfer recording medium 1, as the occasion demands. Thus it is not limited to a structure shown in Fig. 3. For example, images which are transferred and formed from the sublimation dye layer 39 have an excellent gradation property, and the images which are transferred and formed from the layer consisting of the heat fusible ink layer 30 can be readable by means of OCR. Since each of them has such a character, it can be selected and arranged as the occasion demands.

Fig. 4 is a schematic plan view of the other example of an adhesive layer transfer sheet according to the present invention. In the adhesive layer transfer sheet 31, a sublimation dye layer 39 and a heat fusible ink layer 30, which are formed so as to laterally arrange them along the surface on the substrate sheet 22, are formed as the plan shape and size to be fitted to each image forming area allotted on the surface of the transfer-receiving material, on which the images are transferred and formed by using the intermediate transfer recording medium, and not to be wasted. Coloring materials such as sublimation dye and heat fusible ink is transferred by ~~mans~~ means of a heating device such as thermal head to the required area on the receptor layer of the intermediate transfer recording medium, corresponding to each image forming area allotted on the surface of the transfer-receiving material, then the images are formed. Accordingly, the plan shape and the size of the sublimation dye layers 39Y, 39M, and 39C, and the heat fusible

ink layer 30 preferably are formed as the plan shape and the size which are fitting to the transferring and forming image area by the dye and the ink. According to this way, unnecessary area ~~become to reduction~~ is reduced, ~~so~~ thereby being economical and avoiding waste ~~and economy~~. Particularly, toward the image having the complicated shape such as a flower shape and a star shape, the shapes of the each coloring layer are formed as a comparatively simple shape such as a ring shape and a quadrilateral shape such that these shapes cover the shapes such as the flower shape and the star shape, then it can ~~make the~~ provide a facile method ~~easy~~ and reduce waste.

An adhesive layer 37, likewise, is formed as the plan shape and the size for fitting the receptor layer transfer area on the surface of the transfer-receiving material, to avoid ~~the~~ waste. Further, the plan shape and the size ~~is~~ may not always be the same plan shape and size as ~~these~~ those of the receptor layer. Accordingly, there are some cases ~~that~~ where the area of the adhesive layer 37 is smaller than the area of the images forming on the receptor layer. In this case, only the required area in the formed image is transferred on the transfer-receiving material via the adhesive layer 37.

B16

Further, as shown in Fig. 5, the area of each coloring layer of the sublimation dye layers 39Y, 39M, and 39C, and the heat fusible ink layer 30 may be is formed such that that area is smaller than the are of the adhesive layer 27. According to this method, all of the receptor layer bearing the image by each coloring material layer of the adhesive layer transfer sheet 31 can be transferred on the transfer-receiving material thoroughly. Since the redundant part of the sublimation dye layers 39Y, 39M, and 39C, and the heat fusible ink layer, thus, can be reduced, ~~it avoid waste and is effective to the cost reduction~~ waste is avoided and costs are reduced.

Fig. 6 is a schematic sectional view showing one example of an intermediate transfer recording medium (hereinafter referred as "intermediate laminate sheet 28") after an adhesive layer 27 is transferred. An adhesive layer 27 of an adhesive layer transfer sheet 21 is transferred on a receptor layer 8 of an intermediate transfer recording medium 1, on which an image 29 is formed in advance. The other hand, to the intermediate transfer recording medium 1 on which an image 29 is not formed in advance, through the use of the adhesive layer transfer sheet 21

shown in Fig. 2, first, the sublimation dye layers of various color layers of a yellow layer 39Y, a magenta layer 39M, a cyan layer 39C, and black 39B are transferred in order, then the heat fusible ink layer 30 is transferred. According to this steps, the image 29 is formed on the receptor layer 8, and after that the adhesive layer 27 is continuously transferred on the receptor layer 8. In all these cases, the uppermost layer 26 in the adhesive layer 27 is directly adhered with the receptor layer 8. The basement layer 24 easily separating from the release layer 23 of the adhesive layer transfer sheet 21 is positioned at the outermost surface of the intermediate laminate sheet 28 after the adhesive layer 27 is transferred. The image 29 of this case is formed such that the image 29 has the mirror image relation with the image recognized by means of a visual observation, an OCR reading device, and the like, after ~~finally~~ the image has finally been transferred on the transfer-receiving material.

B16

Fig. 7 is a schematic sectional view showing one example of the printed product 41 according to the present invention, obtained by thermal-transferring the intermediate laminate sheet 28. The intermediate laminate sheet 28 on which the adhesive layer 27 is transferred from the adhesive layer transfer sheet 21 is transferred such that, when the receptor layer 8 bearing the image 29 is transferred on the transfer-receiving material 42, the substrate sheet 22 is separated from the protecting layer 4, then the basement layer 24 directly adhere with the transfer-receiving material 42. In thus obtained printed product 41, adhesion between the receptor layer 8 bearing the image 29 and the transfer-receiving material 42 become firm by the adhesive layer 27. Accordingly, the defects of transferring do not occur, and separating does not occur in subsequent ~~using~~ use.

All of the above-mentioned transferring is conducted through use of a heating device of such as a thermal head. The composition of the intermediate transfer recording medium 1 is not limited by showing in Fig. 4 ~~and can be used the composition published until now~~.

Paragraphs 78-87

B17

On the substrate sheet 22, the sublimation dye layer 39 and/or the heat fusible ink layer 30 are arranged in order to form the adhesive layer 27 and the image 29 formed so as to laterally

arrange them along the surface of the substrate sheet 22 ~~is arranged~~. Accordingly, just before the adhesive layer 27 is transferred on the receptor layer 8 of the intermediate transfer recording medium 1, color images and letters is transferred and formed on the receptor layer 8, further the adhesive layer 27 can be transferred and formed by a series of ~~a continuos~~ continuous steps. As a result, the process for forming the image can be reduced, and the costs can be reduced.

According to the printed product 41 of the present invention, the receptor layer 8 bearing the image 29 has an excellent adhesive property with the uppermost layer 26 in the adhesion layer 27, and the transfer-receiving material 42 has an excellent adhesive property with the basement layer 24 in the adhesive layer 27. Hence, regardless of the material of the transfer-receiving material 42 and so on, the receptor layer 8 can be arranged firmly on the transfer-receiving material 42. Accordingly, the printed product 41 on which defects of transferring and separation of the image do not occur, can be obtained. Further, when a passport paper with identification column is used as the transfer-receiving material 42, the receptor layer 8 bearing the image 29 is arranged with firm adhesion. Accordingly, on such a passport, for example, the image 29 such as a picture of one's face and identification matter do not become chipped, and the receptor layer 8 is not separated.

B17 Next, a method for forming a printed product according to the present invention is illustrated with referring to schematic view of Fig. 8 ~~of a schematic view~~.

The method for forming the printed material at least composed of two transfer steps ~~of a first transfer step and a second transfer step~~. In the first transfer step, the adhesive layer 27, 37 of the adhesive layer transfer sheet 21, 31 is transferred on either one of the transfer layer 9 on which the image has been formed in advance, or the transfer-receiving material 42. In the second transfer step, the transfer layer 9 on which the adhesive layer 27, 37 is transferred on the transfer-receiving material 42 on which the adhesive layer is not transferred, or the transfer layer 9 on which the adhesive layer 27, 37 is not transferred or is transferred on the transfer-receiving material 42 on which the adhesive layer 27, 37 is transferred.

In the first transfer step showing in Fig. 8(A), first, the adhesive layer 27, 37 of the adhesive layer transfer sheet 21, 31 is transferred on the transfer layer 9 of the intermediate

transfer recording medium 1. Accordingly, the adhesive layer transfer sheet 21, 31 in which the uppermost layer 26 is arranged at the furthest position from the substrate sheet 22, and the basement layer 24 is arranged at the closest position from the substrate sheet 22, is prepared. The transfer is conducted by a thermal transfer method using a heating device generally such as a thermal head 43. The roller transfer method also can be used. In this method, a roller 44 which can add the heat and pressure is used. When the transfer conducts through use of thermal head 43, only heating portion can transfer, and so the adhesive layer 27, 37 having a pattern can be pattern-transferred on the transfer layer 9. Accordingly, this method is preferably used. ~~The~~ On the other hand, when the transfer ~~conducts~~ is conducted by the roller transfer method, since the adhesive layer 27, 37 can be transferred all over on the transfer layer 9, the transfer can be conducted efficiency, and ~~the~~ productivity is increased. On the outermost surface of the adhesive layer 27, 37, the uppermost layer 26 having the adhesive property suitable to the transfer layer 9, is arranged. Accordingly, the adhesive layer 27, 37 firmly adheres on the transfer layer 9. Hence, the defects of the separation and transferring in the transfer step do not occur.

In case, the adhesive layer transfer sheet 21 on which the coloring material layer is not arranged, is used just before transferring the adhesive layer 27, the image is formed on the transfer layer 9 through use of the thermal transfer sheet ~~using generally~~. ~~The~~ On the other hand, in case, the adhesive layer transfer sheet 31 on which the coloring material layer is arranged, is used, just before transferring the adhesive layer 37 on the transfer layer 9, the image can be formed on the transfer layer. Accordingly, the image and the adhesive layer 37 can be arranged by a series of transferring process effectively, and so it is preferable from the point of shortening the process and reducing the ~~process and~~ cost.

In the subsequently conducting second transfer step shown in Fig. 8(A), the transfer layer 9 on which the adhesive layer 27, 37 is transferred is transferred on the transfer-receiving material 42, then the print product 41 is formed. Generally, transferring is conducted by means of a roller transfer method. The thermal transfer method using a heating device such as a thermal head 43 also can be used. ~~when~~ When an adhesive layer 27, 37 is pattern-transferred on the transfer layer 9, the transfer layer 9 having the same pattern as the transfer-pattern of the adhesive layer 27, 37 can be transferred on the transfer-receiving material 42 through use of the

roller transfer method having the excellent productivity. In the intermediate transfer recording medium on which the adhesive layer 27, 37 is transferred, the basement layer 24 having an adhesive property suitable for the transfer-receiving material 42 is arranged on the outermost surface facing each other to transfer-receiving material 42. Accordingly, the transfer layer 9 firmly adheres on the transfer-receiving material 42 through via adhesive layer 27, 37. Thus, the defects of separation and transferring do not occur in the transferring process, and the excellent quality of the print product 41 can be formed.

~~The~~ On the other side, in the first transfer step showing in Fig. 8(B), first, the adhesive layer 27 of the adhesive layer transfer sheet 21 is transferred on the transfer-receiving material 42. Accordingly, the adhesive layer transfer sheet 21 in which the basement layer 24 is arranged at the farthest position from the substrate sheet 22, and the uppermost layer 26 is arranged at the closest position from the substrate sheet 22, is prepared. In the same way as the above mentioned transfer step shown in Fig. 8(A), the transferring is conducted by the thermal transfer method using a heating device such as a thermal head, generally. The roller transfer method in which a roller 44 can add heat and pressure, also can be used. When the transfer conducts through use of thermal head 43, only the heating portion can be transferred, and so the adhesive layer 27 having a pattern can be pattern-transferred on the transfer-receiving material 42. Accordingly, this method is preferably used. ~~The~~ On the other hand, when the transfer conducts by the roller transfer method, since the adhesive layer 27 can be transferred all over on the transfer-receiving material 42, the transfer can conduct efficiency and the productivity is increased. On the outermost surface of the adhesive layer 27, the basement layer 24 having the adhesive property suitable for the transfer-receiving material 42, is arranged. Accordingly, the adhesive layer 27 firmly adhered on the transfer-receiving material 42. Hence, the defects of the separation and transferring do not occur in the transferring process. In the transfer process showing in Fig. 8(B), first, the adhesive layer 27 is transferred on the transfer-receiving material 42, thus, the adhesive layer transfer sheet 21 in which the coloring material layer is not arranged, is ~~used~~ utilized.

In the subsequently conducting second transferring step showing in Fig. 8(B), the transfer layer 9 is transferred from the intermediate transfer recording medium 1 on the transfer-receiving

material 42 on which the adhesive layer 27 is transferred, and then the printed product 41 is formed. In the transfer layer 9, the image has been formed in advance by means of using the thermal transfer sheet ~~using generally~~. The transferring of the transfer layer 9 is generally ~~conduct~~ performed by a roller transfer method. The thermal transfer method in which a heating device such as a thermal head 43 is used, also can be ~~used~~ utilized. ~~when~~ When the adhesive layer 27 is pattern-transferred on the transfer-receiving material 42, the transfer letter 9 having the same pattern as the transfer-pattern of the adhesive layer 27, can be transferred on the transfer-receiving material 42 by means of the roller transfer method having the superior productivity. In the transfer-receiving material 42 on which the adhesive layer 27 is transferred, the uppermost layer 26 having the adhesive property suitable for the transfer layer 9 is arranged on the outermost surface facing to the transfer layer 9 of the intermediate transfer recording medium 1. Accordingly, the transfer layer 9 is firmly adhered on the transfer-receiving material 42 trough via the adhesive layer 27. Thus, the defects of separation and transferring do not occur in the transfer process, and the excellent quality of the print product 41 can be obtained.

B17

Such as ~~illustrating~~ illustrated above, ~~since~~ the adhesive layer 27, 37 of the adhesive layer transfer sheet 21, 31 is transferred either on the transfer layer 9of the intermediate transfer recording medium 1, or on the transfer-receiving material 42 after that transferred on another one, in accordance with the shape of the transfer-receiving material and so on, the most efficient method for forming the printed product can be selected.

Paragraph 90

In the present invention, a substrate sheet 22 conventionally used for a thermal transfer film can be utilized as ~~it~~ is. There is no specific limitation to the base film 2 for the present invention. As preferred examples of materials of the substrate sheet 22, there will be listed ~~up~~ the following materials: thin papers such as glassine paper, condenser paper or paraffin paper; polyesters having a high heat resistance property such as polyethylene terephthalate, polyethylene naphthalate, polybutylene terephthalate, polyphenylene sulfide, polyether ketone, or polyether sulfone; plastic distraction or non-distraction film made of polypropylene,

B18

polycarbonate, cellulose acetate, polyethylene derivatives, polyvinyl chloride, polyvinylidene chloride, polystyrene, polyamide, polyimide, polymethylpentene, ionomers. The laminated film in which two or more sorts of these materials is laminated can be used. The thickness of the substrate sheet 22 may be changed in accordance with the material to be used so as to provide a suitable strength and heat resisting property, and in usual, the use of the substrate sheet 22 having the thickness of about 1 to 100μm will be preferred.

B18

Paragraphs 92-96

The basement layer 24 is easily separated from a release layer 23 of the adhesive layer transfer sheet 21, 31 and transferred on an intermediate transfer recording medium 1 when the adhesive layer 27 is transferred on the intermediate transfer recording medium 1 from the adhesive layer transfer sheet 21, 31. The basement layer 24 transferred on the intermediate transfer recording medium 1 is positioned on the outermost surface of an intermediate laminate sheet 28, shown in Fig. 6. ~~And when~~ When subsequent transferring on the transfer-receiving material 42, the basement layer 24 is born the role of adhering firmly the receptor layer 8 bearing the image 29 with the transfer-receiving material 42 through adhering directly to the transfer-receiving material 42.

B19

Accordingly, the material of the basement layer 24 is selected in accordance with the material and the property to be used as the transfer-receiving material 42. ~~As t~~The material usually ~~using used~~ typically utilized , ~~such as~~ is selected from the group thermal ~~plasticity~~ plastic synthetic resins, natural resins, rubbers, waxes may be ~~listed~~ utilized. For ~~Example~~ example, ~~there will be listed up the following materials~~ the following materials may be utilized: synthetic resins including cellulose derivatives such as ethyl cellulose, or cellulose acetate propionate; styrene copolymers such as polystyrene, or poly α-methylstyrene; acrylic resins such as polymethyl methacrylate, polyethyl methacrylate, or polyethyl acrylate; vinyl group resins such as polyvinyl chloride, polyvinyl acetate, vinylchloride-vinylacetate copolymer, or polyvinyl butyral; polyester resins; polyamid resins; epoxy resins; polyurethane resins; ionomers; ethylene-acrylic acid copolymers; ethylene-acrylic esters copolymers; tackifier such as rosin, or rosin

natural resin and synthetic rubber such as ester gum, polyisobutylene rubber, isobutylene-isoprene rubber, styrene butadiene rubber, butadiene-acrylonitrile rubber, polyamide resin, or polyorefin chloride. The basement layer 24 is the composition formed of one or more sorts of the above described materials, preferably uses the material which expresses the adhesive property by heating.

When the transfer-receiving material 42 is a passport paper with an identification column, and the material is ~~nature~~ natural paper having the smoothness within the range of 10-1500 seconds by Bec's smoothness, preferably ionomer, polyvinyl pyrrolidone, and polyamide are listed up for the material using as the basement layer 24. The other hand, when coat paper, resin impregnated paper, or resin coat paper is used as the transfer-receiving material 42, the material using as the basement layer 24, may be used vinylchloride-vinylacetate copolymer. For developing the property of sharpness of edge, moisture-resisting pigments may be added.

The basement layer 24 can be formed as ~~follow~~ follows. The coating solution for the basement layer is prepared ~~through that the~~ from one or more ~~sort of~~ materials ~~are~~ selected from the above described materials in accordance with the ~~material of the~~ transfer-receiving material 42 and so on, and ~~added~~ the addition agent is added as the occasion demands ~~then these~~. The materials are ~~dispersing~~ then dispersed or ~~dissolving~~ dissolved in the appropriate solvent such as water and organic solvents. Thus, the obtained coating solution may be coated on the release layer 23 or the intermediate layer 25 by means of the method such as gravure, screen printing, or reverse coating using a gravure plate, and dried. Although, a thickness of the basement layer is decided in accordance with the adhesive property to the transfer-receiving material 42 and receptor layer 8 via the adhesive layer 27, and the operational property, it is preferred for the basement layer to have a thickness of about 0.5 to 20 μm.

[Uppermost layer]

The uppermost layer 26 is formed of the material having ~~the~~ an excellent adhesive property to the receptor layer 8, positioned on the outermost surface of the adhesive layer 27 on the adhesive layer transfer sheet 21, 31, and as a part thereof. The uppermost layer 26 has a role of firmly adhering to the receptor layer 8 bearing the image 29 already, when the adhesive layer

27 is transferred on the intermediate transfer recording medium 1 from the adhesive layer transfer sheet 21, 31.

Paragraphs 98-101

Accordingly, the material formed of the uppermost layer 26 is selected in accordance with the material and property of the receptor layer 8. As the general composing material, the similar material which is listed as the material used for basement layer 24, can be ~~used~~ utilized. In these ~~material;~~ materials, it is preferable to use one or more ~~sorts of~~ synthetic resins including: acrylic resins such as polymethyl methacrylate, polyethyl methacrylate, or polyethyl acrylate; vinyl group resins such as polyvinyl chloride, polyvinyl acetate, vinylchloride-vinylacetate copolymer, or polyvinyl butyral; polyester resins; polyamid resins; epoxy resins; polyurethane resins; ionomers; ethylene-acrylic acid copolymers; ethylene-acrylic esters copolymers.

Further, it is preferable that the glass-transition temperature of the resin formed of the uppermost layer 26 is not less than 60°C. Accordingly, when the adhesive layer transfer sheet 21, 31 ~~keep~~ kept under the conditions which cause the adhesive layer transfer sheet ~~is rolled~~ to roll up, or pile up, especially under bad conditions such as high temperature during keeping, the blocking, that is the uppermost layer may stick to the back surface of the substrate sheet. This can be prevented with the present invention.

When the receptor layer 8 is formed of vinylchloride-vinylacetate copolymer resin, as the material formed of the uppermost layer 26, vinylchloride-vinylacetate copolymer as same, polyester resin or acrylic resin can be preferably ~~listed~~ utilized. According to ~~adopting~~ use of these materials, the uppermost layer 26 can obtain the preferable firm adhesive property.

The uppermost layer 26 can be formed as follows. The coating solution for forming the uppermost layer 26 is prepared ~~through that the~~ with one or more ~~sorts of~~ materials ~~are~~ selected from the above described materials in accordance with the material formed of the receptor layer 8, and added to the addition agent and the like as the occasion demands, then these materials are ~~dispersing~~ dispersed or ~~dissolving~~ dissolved in the appropriate solvent such as water and organic

solvents. Thus, the obtained coating solution may be coated on the intermediate layer 25 by means of the method such as gravure, screen printing, screen printing, reverse coating using a gravure plate, and dried. Although, a thickness of the uppermost layer is decided in accordance with the adhesive property to the transfer-receiving material 42 and the receptor layer 8 via the adhesive layer 27, and the operational property, it is preferred for the uppermost layer to have a thickness of about 1.0 to 20 μm under dry conditions.

Paragraph 105-107

The intermediate layer 25 can be formed as follows. The coating solution for forming the intermediate layer 25 is prepared ~~through that the~~ from one or more ~~sorts of~~ materials ~~are~~ selected from the above described materials in accordance with the material formed of the basement layer 24 and the uppermost layer 26, and added to the addition agent and so on as the occasion demands, then these materials are ~~dispersing~~ dispersed or ~~dissolving~~ dissolved in the appropriate solvent such as water and organic solvents. Thus the obtained coating solution may be coated on the basement layer 24 by means of the method such as gravure, screen printing, and reverse coating using a gravure plate, and dried. The thickness of the intermediate layer 25 is usually within the range of 0.5 to 20 μm under dry condition.

Thus the formed intermediate layer 25 has an effect which is the absorption of the unevenness which exists on a surface of the transfer-receiving material 42, other than the effect to develop the adhesive property between the basement layer 24 and the uppermost layer 26. Accordingly, the intermediate layer 25 is effective for developing the adhesive property to the transfer-receiving layer 42 and to the transfer layer 9, which is adhered to the basement layer 24 and the uppermost layer 26 respectively, and also for improving the quality of the finally obtained printed product 41. Further, when the basement layer 24 and the uppermost layer 26 is formed of the material which can adhere under low temperature, since heat-softening and fluidization do not occur on the receptor layer 8 by heating during the thermal-transfer, turbulence of the image born on the receptor layer 8 does not occur. As the material which can

adhere at low temperature, for example, polyester reigns, ionomer, and vinylchloride-vinylacetate copolymer can be ~~listed up~~ utilized.

Concerning the total thickness of the adhesive layer 27 ~~comprised~~ comprising the above-mentioned basement layer 24, the uppermost layer 26, and the intermediate layer 25 which is arranged as the occasion demands, regardless of the each thickness, when the smoothness of the surface of the transfer-receiving material is 10-1500 sec. ~~Of~~ of Bec's smoothness, the range of the thickness is preferably within 2-60μm. When the thickness of the adhesive layer is less than 2μm, there is the problem such that the uniform adhesion to the transfer-receiving layer 42 is not enough, and when the thickness is more than 60μm, there is the problem such as an unintentional peeling of the layer and defects of a property of edge sharpness, and also a waste.

Paragraph 110

The release layer 23 can be formed as follows. The coating solution for forming the release layer is prepared ~~through that~~ from the above described resin ~~are dispersing~~ being dispersed or dissolved in the appropriate solvent. Thus, the obtained coating solution may be coated on the substrate sheet 22 by means of the method such as gravure, screen printing, or reverse coating using a gravure plate, and dried. The thickness of the release layer 23 is usually within the range of 0.1 to 5μm under dry condition.

Paragraph 113

Any conventionally known sublimation dye can be utilized in the present invention as the sublimation dye, and ~~do not limited especially~~ no limitation is intended. As the magenta sublimation dye, the following dyes may be exemplified: MS Red G, Macrolex Red Violet R, Ceres Red 7B, Samaron Red HBSL, Resolin Red F3BS. The following dyes may be exemplified as the yellow sublimation dye: PHORONE BRILLIANT YELLOW-6GL, PTY-52, and MACROLEX YELLOW 6G. As the cyan sublimation dye, the following dyes may be

exemplified: KAYASET BLUE 714, Waxoline BLUE AP-FW, PHORONE BRILLIANT BLUE S-R, and MS BLUE 100.

Paragraph 118

The heat fusible ink layer 30 is arranged with the adhesive layer 27 and the like so as to laterally arrange them along the surface on the substrate sheet 22 of the adhesive layer transfer sheet 21, similar to above described the sublimation dye layer 39. The image 29 is formed through that the heat fusible ink layer 30 is thermal-transferred on the receptor layer 8 of the intermediate transfer recording medium 1 by means of a heating device such as a thermal head. Accordingly, since forming the image 29 and transferring the adhesive layer 27 on the intermediate transfer recording medium 1 can conduct within a series of the process, it is preferable that the complication of the process can be avoided.

Paragraph 127

~~There may be used wax~~ Wax and the like may be used instead of the above described the binder resin, and the binder resin which is added the wax and the like. As ~~the~~ a typical example of the wax, microcrystalline wax, carnauba wax, and paraffin wax can be ~~listed~~ utilized. Further, the material which may be used as wax is listed ~~up~~ as follow: Fischer-Tropsch's wax, various low molecular polyethylene, Japan tallow, bees wax, cetaceum, insect wax, wool wax, shellac wax, candelilla wax, petrolatum, partially modified wax, fatty acid ester, and fatty acid amide.

Paragraph 131

For ~~Further~~ further improving the heat-resistance property, the backing layer is preferably formed of cross-linking resin by selecting a resin having a reactive group from the above-mentioned resins, and using a cross-linking agent such as polyisocyanate in combination therewith. Furthermore, in order to provide heat-resistively sliding ability for the backing layer

B26 and improve sliding ability against the thermal head and so on, solid or liquid releasing agent or lubricant may be added to the backing layer.

Paragraph 133

The detection mark (not shown) is preferably arranged to the adhesive layer transfer sheet 21, 31. It is generally used as a positioning mark, for ~~Example~~ example, in order to transfer the B27 adhesive layer 27 to the designated position on the receptor layer 8 of the intermediate transfer recording medium 1 and to transfer the various color of the dye and ink, and adhesive layer 27 and the like on the receptor layer 8, without dislocation of a position and a color.

Paragraph 135

The shape of the detection mark can be adopted any shapes as long as capable of being detected by an optical detector. The shape thereof is not specifically limited and, for example, round ~~shape~~, rectangular ~~shape~~, linear ~~shape~~, or the like, or the conventional detection mark such as a penetration hole may be adopted. The printed detection mark can be formed by means of the conventional printing method and the like, at a part or plural parts on either surface of the B28 substrate sheet 22 of the adhesive layer transfer sheet 21, 31. In case, the detection mark is formed through printing, ~~the~~ conventional material can be used as the ink ~~to be used,~~. This is not intended to be limiting ~~and especially is not limited~~.

Paragraph 137

Fig. 9 and Fig. 10 ~~is~~ are showing a schematic sectional view of one ~~exsample~~ example of the intermediate transfer recording medium using to form of the printed product according to the B29 present invention. In the intermediate transfer recording medium 1, at least a receptor layer 8 is arranged on the base film 2.

Paragraphs 139-140

On the base film 2, shown in Fig. 9, a separate layer 3, a protecting layer 4, a hologram layer 5, a transparent vapor deposition layer 6, an anchor layer 7, and a receptor layer 8 can be arranged in this order. Further, showing in Fig. 10, on the base film 2, a protecting layer 4, an anchor layer 7, an ultraviolet rays absorption layer 45, a heat seal layer 46, and a receptor layer 8 may be arranged in this order. These layers show well known action and effect, the formation is not limited to the formation shown in Fig. 9 and Fig. 10. It is possible to add the other conventional layers.

On the receptor layer 8 arranged on the intermediate transfer recording medium 1, the adhesive layer 27, or an image 29 and the adhesive layer 27 is transferred from the adhesive layer transfer sheet 21, 31 according to this invention. Then, on the surface of the adhesive layer 27 of the intermediate transfer recording medium (intermediate laminate layer 28), on which the image 29 and the adhesive layer 27 is transferred, the basement layer 24 having a suitable adhesive property to the surface of the transfer-receiving material 42 is arranged. Thus, the receptor layer 8 on which the image is formed, is transferred on the transfer-receiving material 42 from the intermediate laminate layer 28 with other necessary layers by ~~mans~~ means of the thermal transfer. As a result, the printed product 41 according to the present invention is formed.

B30

The receptor layer 8 is firmly adhered to the transfer-receiving material 42, and hardly separated, because the receptor layer 8 has excellent adhesion property to the uppermost layer which is transferred simultaneously. Further, ~~Since~~ since the receptor layer 8 is formed of the resin material which easily ~~receipt~~ receives the above described sublimation dye and heat fusible ink, the high quality image having excellent gradation property, can be easily obtained ~~easily~~. ~~thus~~ Thus it is satisfactory to form ~~the~~ a picture of one's face for identification, which is required high quality printing, for example, the picture of one's face for a passport and so on.

Paragraphs 144-146

Even if the receptor layer 8 using the ordinary material, turbulence of the image by thermal-softening and fluidization of the receptor layer 8 during the thermal-transfer, can be ~~prevent~~ prevented through ~~that~~ the basement layer 24 and uppermost layer 26 that are formed of the material which can adhere at low temperature.

The receptor layer 8 can be formed as ~~follow~~ follows. The coating solution for forming the receptor layer is prepared through that the one or more sorts of materials are selected from the thermoplastic resins having the satisfactory dyeing property, and added the addition agent as the occasion demands, then these materials are dispersing or dissolving in the appropriate solvent such as water and organic solvents. Thus obtained coating solution may be coated on the base film 2, or when the protecting layer 4 or the like is formed on the substance film 2, thereon, by means of the method such as gravure, screen printing, and reverse coating using a gravure plate, and dried. The thickness of the receptor layer 8 is within the range of about 0.11 to 10 μm under dry condition.

B31

Concerning the addition agent, generally using a plasticizer having from low molecular weight to high molecular weight such as the plasticizer for vinyl chloride resin, such as ester phthalate, phosphate, or polyester plasticizer, may be added as the plasticizer in order to improve the printing sensitivity of the receptor layer 8. The addition agent is preferably added in an amount of 0.5 to 30 weight % with respect to the amount of resin.

Paragraphs 148-149

A separate layer 3, a protecting layer 4, a hologram layer 5, a transparent vapor deposition layer 6, and an anchor layer 7 shown in Fig. 9, or a protecting layer 4, an anchor layer 7, an ultraviolet rays absorption layer 45, and a heat seal layer 46 shown in Fig. 10 are generally arranged at appropriate position between the base film and the receptor layer 8 in the intermediate transfer recording medium 1, in accordance with the property of each layer. These

B32

layers ~~is~~ are transferred on the transfer-receiving material 42 through separating from the base film 2 with the receptor layer 8, and composed of the printed product 41.

B32

Each of these layers will be briefly discussed as ~~follow~~ follows.

Paragraphs 151-152

The material forming ~~of~~ the protecting layer 4 may be used the material used for conventional protecting layer. It is preferable to select the resin composition having the appropriate separating property against the base film 2, and after transferred on the transfer-receiving material 42 with the receptor layer 8, having the demanded property as the surface protecting layer of the receptor layer 8, for example, a fingerprint-resistance property.

When, especially, abrasion proof property, chemical-resistance property, or contamination-resistance property is required to the protecting layer 4, ionizing radiation hardening type resin may be used as the material for the protecting layer 4. Further, the material for a protecting layer 4 such as a lubricant in order to improve a paratripsis-resistance property of the image forming material, a surfactant in order to prevent the contamination, an ultraviolet rays absorbing agent in order to improve a weather resistant property, and the antioxidant and so on, may be used. The protecting layer 4 can be formed by a similar method as the method for the receptor layer 8, and the thickness of the protecting layer 4 is preferably within the range of 0.1 to 10μm.

B33

Paragraphs 154-158

The material in order to form the separate layer 3 may be used the conventional material, and is not intended to be limited.

~~Trough~~ By using the intermediate transfer recording medium 1 on which the hologram layer 5 is arranged, there can be obtained the printed product having ~~the~~ a hologram pattern. Such a printed product on which the hologram pattern is arranged, may be used as a credit card and a passport besides use for decoration, because it is difficult to forge by a reproduction.

B34

As the material for forming ~~of~~ the hologram layer 5, ~~the~~ conventional material can be used, and is not to be limited. ~~And a~~ A method for forming the hologram layer 5 may adopt the conventional method.

A transparent vapor deposition layer 6 is generally arranged on the side of the receptor layer 8 contacting the hologram layer 5. This transparent vapor deposition layer 6 has a different refractive index from the other layers, so that, in the formed printed product 41, this layer has an action such as rising the pattern of the hologram.

B34

The material for forming the transparent vapor deposition layer 6 can be used a conventional material, for example, metallic sulfide or metallic oxide such as ZnS, TiO_2, SiO_2, or Cr_2O_3, and ~~it~~ this is not ~~limited especially~~ intended to be limiting. Further, a method for forming can ~~be adopt~~ use ~~the~~ a conventional method such as vapor deposition, sputtering, or ion plating.

Paragraphs 160-166

The conventional material to form the anchor layer 7 can be used ~~conventional material,~~ and ~~it~~ this is not ~~limited~~ intended to be limiting. Further, a method to form ~~also adopt the conventional method~~ the layer may be conventional.

An ultraviolet rays absorbing layer 45 is arranged at an appropriate position between the receptor layer 8 and the base film 2, in order to prevent deterioration of the image 29 of the printed product 41 from ~~an~~ ultraviolet rays in natural light.

B35

~~The~~ Conventional material to form the ultraviolet rays absorbing layer 45 can be used ~~conventional material,~~ and ~~it~~ this is not ~~limited~~ intended to be limiting. Further, a method to form ~~also adopt the conventional method~~ the absorbing layer may be conventional.

Next, ~~there will be explained concerning a~~ the transfer-receiving material is explained. On the transfer-receiving material 42, each layer such as the receptor layer 8 bearing the image 29 and the above described ~~the~~ other required layers ~~is~~ are transferred from the intermediate laminate sheet, as a result, the printed product 41 is constructed.

A transfer-receiving material 42 used in this invention is not unduly limited ~~especially~~, and for example, ~~every~~ materials such as a natural fiber paper, a coat paper, a tracing paper, a plastic film which is not deformed through heating during the transfer, a glass, a metal, a ceramics, a wood, a cloth and so on may be used. Concerning the shape and the use, almost ~~sorts~~ any type may be adopted, for example: gold notes such as a stock, a bill, a bond, bankbooks, a train ticket, horses and vehicles ticket, a revenue stamp, a postage stamp, an appreciation ticket, an admission ticket, a ticket; cards such as a cash card, a credit card, a prepaid card, a member's card, a greeting card, a postal card, a visiting card, a driver's license, an IC card, a light card; cases such as a carton, a container; bags; records; personal ornaments such as an envelope, a tag, an OPH sheet, a slide film, a bookmark, a calendar, a poster, a pamphlet, a menu, a passport, POP things, a coaster, a display, a nameplate, a keyboard, a cosmetic, a watch, a lighter; stationery such as writing materials, a report paper; building materials; a panel; an emblem; a key; cloth; clothing; shoes; devices such as a radio, a television, a calculator, OA apparatus; various sample books; an album; output of computer graphics; medical treatment image output and the like may be ~~listed~~ utilized.

B35

Particularly, when a full color picture of one's face and the other required matter are transferred on the passport which is demanded the image of high resolution and high quality, the adhesive layer transfer sheet 21, 31 and the intermediate laminate sheet 28 shown in Fig. 6 are preferably used. As a passport paper, a ~~nature~~ natural paper is generally used, and in ~~same~~ some cases, the quality such as smoothness is varied in accordance with the country. Even when the paper ~~have the~~ has a Bec's smoothness of 10 to 1500 seconds, the basement layer 24 can firmly adhere, and even when the smoothness is worse than the above case, since the basement layer 24 and the intermediate layer 25 are formed as the occasion demands and perform a role as a buffer layer, the printed product 41 in which quality of the image is excellent, and lacking and separating the image do not occur, can be easily obtained.

The printed product 41 according to the present invention can be formed through use of the above described adhesive layer transfer sheet 21, 31 and the intermediate transfer recording medium 1. The method to form the printed product will be described as ~~follow~~ follows.

Paragraph 168-171

~~That is, the~~ The adhesive layer transfer sheet 21, 31 is transferred on the receptor layer 8 of the intermediate transfer recording medium 1 which is used for transferring the receptor layer 8 bearing the image 29 on the transfer-receiving material 42, such that the uppermost layer 26 of the adhesive layer 27 is adhered to the receptor layer 8. ~~And the~~ The intermediate transfer recording medium 1 (intermediate laminate sheet 28) on the outermost surface of which the basement layer 24 is arranged through transferring the adhesive layer 27, is transferred on the transfer-receiving material 42. Then the printed product 41 is formed ~~through~~ so that the image 29 is formed on the transfer-receiving material 42.

The adhesive layer transfer sheet 21, 31, the intermediate transfer recording medium 1 and the transfer-receiving material 42 used in this case, ~~is used what is~~ are formed by above described material and method.

In case the adhesive layer transfer sheet 21, in which the sublimation dye layer 39 and/or the heat fusible ink layer 30 is arranged with the adhesive layer 27 so as to laterally arrange them along a surface of the substrate sheet 22, is used, color images, letters and the adhesive layer 27 can be transferred and formed on a series of continuous process when the adhesive layer 27 is transferred from the adhesive layer transfer sheet 21 on the receptor layer 8 of the intermediate transfer recording medium 1. Accordingly, since there is no requirement ~~which have~~ having to conduct ~~the~~ a separate process for forming the image, the process can be reduced, and it is especially suitable ~~for~~ because of its low cost.

The receptor layer 8 on which the image 29 is formed and the transfer-receiving material 42 ~~is~~ are firmly adhered by means of the uppermost layer 26 and the basement layer 24 having the suitable adhesive property to respective layer. Accordingly, in the forming process of the printed product 41, defects of the adhesion between the receptor layer 8 and the transfer-receiving material 42 do not occur. In the printed product after forming, the separation of the receptor layer 8 and lack of the image 29 do not occur. According to this method, the printed product 41 which ~~hates~~ cannot tolerate the lack of the images, such as a passport, an ID card, a credit card, or an identification card can be formed preferably.

For example, in Fig. 11, a picture of the one's face 52 is formed of the sharp color image by various colors of the sublimation dye. The picture positioned at the upper left corner of the passport 51 is formed as a circle, an ellipse or a quadrilateral. The letter such as nationality, address, name, date of birth, and the distinction of sex (hereinafter, referred as nationality and so on 53) formed through use of heat fusible ink at center portion, and OCR readable mark and letters 54 are formed through use of heat fusible ink at the under portion. A fingerprint pattern and a signature 55 ~~is~~ are formed by use of sublimation black dye at the right portion.

As a passport 51, when ~~a sort of~~ an image to be printed at a definite portion is fixed, it is preferable to use an adhesive layer transfer sheet 50 suitable for forming thereof. Concretely, shown in Fig. 10, preferably, various colors of the sublimation dye layers 39Y, 39M, 39C are arranged such that plane shape and size of the sublimation dye layer 39Y, 39M, 39C is corresponded to the area on which a color picture 52 should be formed, the sublimation black dye layer 39B ~~is corresponded~~ corresponds to the area on which a fingerprint pattern and a signature 55 should be formed, and the heat fusible ink layer 30 is arranged such that plane shape and size of the heat fusible ink layer 30 ~~is corresponded~~ corresponds to the area on which a nationality and so on 53 and OCR readable mark and letters 54 should be formed. According to this method, unnecessary coloring material can be saved and therefore avoid waste, ~~so become~~ and therefore the method is economical.

B37

The adhesive layer 27 is composed of the uppermost layer 26 having the adhesive property suitable for the receptor layer 8 of the intermediate transfer recording medium 1, and the basement layer 24 having the adhesive property suitable for a passport paper as the transfer-receiving material 42. Plane shape and size of the adhesive layer 27 ~~is corresponded~~ preferably corresponds to the image forming area (HxL) of a passport 51~~, preferably~~.

Following is description of forming various images to a passport 51. First, various colors of the sublimation dye layer 39 and the heat fusible ink layer 30 ~~is~~ are transferred and formed on the receptor layer 8 of the intermediate transfer recording medium 1 from the above described adhesive layer transfer sheet 50 for a passport, such that the formed image on the receptor layer 8

is formed as the reflected image against the image 29 to be finally formed ~~finally~~. Then, the adhesive layer 27 ~~is~~ completely ~~covered~~ covers the image. The adhesive layer 27 and the receptor layer 8 become ~~to~~ firmly adhered through the uppermost layer 26 having the adhesive property suitable for the receptor layer 8. Accordingly, on the subsequent process, defects of transfer do not occur during transferring on the passport 51.

B37

Paragraph 179-182

On the intermediate transfer recording medium 1, as above described, a separate layer 3, a protecting layer 4, a hologram layer 5, a transparent vapor deposition layer 6, an anchor layer 7, an ultraviolet rays absorption layer 45, a heat seal layer 46 and the like may be properly arranged. As the intermediate transfer recording medium 1 for a passport, for example, shown in Fig. 9, it is preferable that a separate layer 3, a protecting layer 4, a hologram layer 5, a transparent vapor deposition layer 6, an anchor layer 7, and a receptor layer 8 ~~is~~ are formed on the base film 2 in this order.

B38

On thus formed passport 51, since the defects of transfer do not occur when the image 29 transfer from the intermediate transfer recording medium 1, separation of the receptor layer 8 and lack of the image do not ~~generate~~ occur. This is very important ~~thing~~ aspect for the passport or the other identification document in which forming image such as a picture of the one's face 52 and nationality and so on 53 have important meaning.

According to this invention, when using the material of the receptor layer 8 and transfer-receiving layer 42 ~~is~~ various, ~~there~~ problems can be avoid ~~problems~~ through use of the adhesive layer transfer sheet 21, 31 having the adhesive layer 27 formed of the different materials which have the suitable adhesive property respectively in order to transfer a high resolution and a high quality image.

EXAMPLE

Hereunder, the adhesive layer transfer sheet according to the present invention will be more concretely explained by way of preferred examples executed. Units of "part(s)" and "%"

0038 described in the following examples mean "weight part(s)" and "weight %" respectively as far as a particular note ~~is not there~~ are not shown.